

REMARKS

Reconsideration is respectfully requested in view of any changes to the claims and the remarks herein. Please contact the undersigned to conduct a telephone interview in accordance with MPEP 713.01 to resolve any remaining requirements and/or issues prior to sending another Office Action. Relevant portions of MPEP 713.01 are included on the signature page of this amendment.

Claim Objections

In response to the Objection to claim 35, in line 1, "claim 36" has been changed to -claim 30-.

Claim Rejections - 35 USC § 102

Claims 41-43, 45-48-49, 51-52, 54-60 have been rejected under 35 U.S.C. 102(b) as being anticipated by Ayata et al. (U.S. Patent No. 5006,864). Applicant respectfully disagrees.

Claim 48 recites:

CLAIM 48 An information storage device comprising: an array of magnetic memory elements; and a plurality of heating elements for said array of magnetic memory elements, said heating elements are included with said magnetic memory elements extending across the array.

The Examiner states "Regarding claim 48, Ayata et al. disclose an information storage device (ABSTRACT, An information read-out and recording apparatus, Figure 6A, Figure 35)." A read-out and recording apparatus is not necessarily an "information storage device" as claimed.

The Examiner further states that Ayata et al. teaches "an array of magnetic memory elements (Column 20, 17-20)." Applicant respectfully disagrees. Ayata et al. Column 20, 17-20) teaches "The memories M1 and M2 are composed for example of

random access memories, CCD memories, magnetic memories, etc., and have memory capacities respectively of 32 bits and 56 kilobits." This does not teach "a plurality of heating elements for said array of magnetic memory elements" as recited in claim 48.

The Examiner further states that Ayata et al. teaches "a plurality of heating elements (Figure 28, 1H1-1H32, Column 17, lines 4-32) for said array of magnetic memory elements." Applicant respectfully disagrees. Ayata Fig. 28 does not show 1H1-1H32 are associated with memory elements M1 and M2. There is no teaching in Ayata et al. Column 17, lines 4-32 that 1H1-1H32 are associated with memory elements M1 and M2. But, Ayata et al. Col. 23, lines 33-35, teaches "FIG. 42 shows a drive circuit for the ink jet head shown in FIG. 41, wherein 1H1-4H512 are heating elements for the ink jet head." Thus Ayata et al. expressly teaches away from applicants' claimed invention. Therefore, Ayata et al. cannot anticipate applicants' invention.

The Examiner further states referring to Ahata et al. : "said heating elements are included with said magnetic memory elements extending across the array (Figures 5, 6A.28 Column 6, lines 41-68, Column 7, lines 1-37, M magnetic memory, H is heat element)." Applicant respectfully disagrees. Ayata et al. Figs. 5, 6A and 28 do not show "said heating elements are included with said magnetic memory elements extending across the array" as asserted by the Examiner. Ayata et al. Col. 6. lines 41-54 teaches :

FIG. 5 shows an example of the head structure in a schematic exploded perspective view, in which a substrate SS1 is provided on the surface thereof with heating elements H1-H7, a common electrode D1 and selecting electrode I1-I7. Heating elements H1-H7 are of the same area and the same resistance and are positioned respectively corresponding to the liquid chambers. A plate GL1 is provided with a liquid supply inlet IS, small grooves M1-M7 constituting the liquid chambers and a common groove MD for supplying the liquid to the liquid chambers. Grooved plate GL1 is further provided, if necessary, with an orifice plate (not shown) at the droplet emitting side. (Emphasis added.)

Thus Ahata et al. Column 6, lines 41-68 teaches that the heating element s H1-H7 are for grooves M1-M7 for supplying liquid to liquid chambers. This has nothing to do with a array of magnetic memory elements and thus is unrelated to applicants claimed invention. Ayata Fig. 28 does not show 1H1-1H32 are associated with memory elements M1 and M2. There is no teaching in Ayata et al. Column 17, lines 4-32 that teaches 1H1-1H32 are associated with memory elements M1 and M2. But, Ayata et al. Col. 23, lines 33-35, teaches "FIG. 42 shows a drive circuit for the ink jet head shown in FIG. 41, wherein 1H1-4H512 are heating elements for the ink jet head." Thus Ayata et al. expressly teaches away from applicants' claimed invention.

Ayata et al. Column 7, lines 1-37 teaches at line 16- 20:

FIG. 7 shows, in a cross-sectional view, another embodiment of the droplet emitting head basically similar to the foregoing and provided with plural heating elements H1, HII, HIII, etc. for controlling the tonal rendition. As illustrated therein the substrate SS1 provided with **heating elements H1, HII and HIII is placed on a metal heat sink HS and is covered with the grooved plate GL1 as explained in the foregoing to constitute a liquid chamber S at the junction therebetween.** (Emphasis added)

Thus Ayata et al. Column 7, lines 1-37, teaches heating elements H for a liquid chamber. There is no mention of magnetic memory elements M in Ayata et al. Column 7, lines 1-37. Thus Ayata does not teach that there is magnetic memory M associated with a heat element H as stated by the Examiner.

The Examiner states "Regarding claims 49, 51, Ayata et al. disclose wherein the heating elements are conductors (Column 17, lines 27-32, the heat element Hi is provided on insulating layer 11 supported by 1C and the conductive layer constituting the electrode L.)"

Ayata et al. Column 17, lines 27-32, teaches:

As will be apparent from the cross-section shown in FIG. 29, the heating element H_i is provided on insulating layer I₁ supported by the substrate 1C, and the conductive layer constituting the electrode L at the **orifice** side for power supply to the element is connected to the conductive substrate 1C. (Emphasis added)

This has nothing to do with applicants claimed invention.

Ayata et al states in the Field of the Invention at Col 1:

The present invention relates to a droplet generating method and apparatus therefor, and more particularly to a method and apparatus therefor, for emitting a droplet from an orifice of a small liquid chamber containing liquid therein more specifically the present invention provide a method for repeated high-speed generation of the droplets and apparatus for allowing accurate generation of droplets of a uniform diameter. (Emphasis added.)

Thus the orifice referred to in Ayata et al. Column 17, lines 27-32, is for liquid drop formation and has nothing to do with a magnetic memory.

The Examiner states "Regarding claim 52, Ayata et al. disclose wherein the heating lines extend diagonally across the array (Figure 5, H1-H7, L1-L7)." Applicants respectfully disagree that this has anything to do with applicants' claimed invention. Ayata et al. Col 6, lines 41- 45 teaches:

FIG. 5 shows an example of the head structure in a schematic exploded perspective view, in which a substrate SS1 is provided on the surface thereof with heating elements H1-H7, a common electrode D1 and selecting electrode I1-I7.

Thus Figure 5, H1-H7, L1-L7 has nothing to do with applicants' claimed invention but is directed to heating elements H1-H7 with a common electrode D1 and selecting electrode I1-I7 for generating liquid drops as describe above.

The Examiner states "Regarding claim 54, Ayata et al. disclose wherein the heating elements raise the temperature of selected memory elements (Column 5, lines 10-48, Figure 9)." Applicants respectfully disagree. Ayata et al. Col 4, lines 1-14 teaches:

A liquid chamber W constituting the emission head is supplied with liquid 1IK. Upon receipt of a drive signal, a heating element H1 having a width .DELTAL and located at a distance l from an orifice OF initiates the temperature rise. When heating element H1 reaches a temperature above the evaporating point of the liquid contained in the chamber W1, a bubble B is formed on heating element H1. With the rise of temperature thereof, bubble B rapidly increases the volume thereof. As the result the pressure in the liquid chamber W1 rapidly increases, and the liquid present in the chamber W1 is displaced rapidly in the direction of the orifice OF and in the opposite direction by an amount equal to the volume increase of the formed bubble B.

Ayata et al. Col 5, lines 6-14 teaches:

FIG. 2 schematically shows the procedure of liquid emission in the steps of t0 to t9, wherein there are shown the liquid chamber W, heating element H1 and orifice OF, and the liquid IK is supplied by capillary action from a direction P. FIG. 3A shows an example of the drive pulse, wherein times t0-t9 respectively correspond to those in FIG. 2. FIGS. 3B and 3C respectively show the temperature change of the heating element H1 and the volumic change of the bubble B.

Ayata et al. Fig. 9 is directed to wave form charts for applying heat to the heating elements to make liquid drops. (Se Ayata et al. Col 8 lines 2-0- 41) Thus Ayata Column 5, lines 10-48, Figure 9, is unrelated to applicants' claimed invention.

The Examiner states "Regarding claims 55-56, Ayata et al. disclose further comprising first means for generating magnetic fields for switching selected memory elements; and second means for causing the heating elements to apply heat to the selected memory elements while the magnetic fields are being applied (Column 15, lines 62-68, Column 16, lines 1-25)." Applicants respectfully disagree. The term "magnetic field" appears nowhere in the teaching of Ayata et al. The Examiner has no identified where this term is located. It is not in Ayata et al. Column 15, lines 62-68, Column 16, lines 1-25. The term magnetic only appears in Ayata et al. Col 20. lines 17-20, which teaches:

The data retained in said latch circuit LA1 are alternately supplied, for every 32 bits, to said memories M1 and M2. The memories M1 and M2 are composed for example of random access memories, CCD memories, **magnetic** memories, etc., and have memory capacities respectively of 32 bits and 56 kilobits, corresponding to one word and 1792 words, each word being composed of 32 bits. (Emphasis added.)

As shown above this has nothing to do with applicants' claimed invention which is thus not anticipated by Ayata et al.

The Examiner states "Regarding claim 57, Ayata et al. disclose an information storage device (Figure 25) comprising: an array of magnetic memory elements (Column 20, lines 15-28); and means for performing thermally-assisted switching (Figure 25, MD) of selected memory elements in the array said means comprises heating elements included in the devices extending across the array (Column 16, lines 5-12)." Applicants respectfully disagree.

Ayata et al. Col. 15, line 62 – Col 16. line 4, teaches:

FIG. 25 shows an example of the circuit for resolving the above-mentioned drawback by the use of a transistor array TA in place of the diode array DA. In that circuit the plural heating elements 1H1-56H32 are connected at one ends thereof respectively to collectors of transistors 1T1-56T32 and are connected in common at the other ends. The emitters of the transistors are connected in a grouped fashion to **switching elements MD1-MD56**, and the bases of the transistors in each block are respectively connected to image information input terminals P1-P32. (Emphasis added)

Thus MD is described as a switching element and not as a "magnetic memory element" as claimed.

As described above Ayata et al. Column 20, lines 15-28, does not teach "magnetic memory elements."

Ayata et al. Column 16, lines 5-12, teaches:

In this embodiment, the heating element 56H32 for example can be activated by closing the switching element MD56 while maintaining other switching elements MD55-MD1 and supplying an image signal to the terminal P32, whereby the transistor 56T32 is rendered conductive to supply current to heating element 56H32 through a circuit HV -56H32 - 56T32 - MD56 - ground EA.

This has nothing to do with a "magnetic memory element" as claimed and thus cannot anticipate applicants' claims.

The Examiner states "Regarding claim 60, Ayata et al. disclose wherein the heating elements are spaced apart from the memory elements (Figure 25, 1H1, 2H32)." As shown above Ayata et al. Fig. 2 does not show "magnetic memory elements" and thus cannot anticipate applicants' claim 60.

The Examiner states "Regarding claims 41-43, 45-47, 58-59 the apparatus discussed above should performed the method of claims 41-43, 45-47, 48-49." Applicants respectfully disagree. As shown above Ayata et al. does not teach a structure as claimed by applicants in their apparatus claims. Thus applicants' claims 41-43, 45-47, 58-59 cannot be anticipated by Ayata et al. for the reasons given by the Examiner and in view of the remarks above.

In view of the remarks herein applicants respectfully request the Examiner to withdraw the rejection of claims 41-43, 45-48-49, 51-52, 54-60 have been rejected under 35 U.S.C. 102(b) as being anticipated by Ayata et al. (U.S. Patent No. 5006,864).

Allowable Subject Matter

Applicants gratefully acknowledge the allowance of claims 21-24, 26-33, 35-40 and the indication of allowability of claims 44, 53 rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Please charge any fee necessary to enter this paper and any previous paper to deposit account 09-0468.

If the above-identified Examiner's Action is a final Action, and if the above-identified application will be abandoned without further action by applicants, applicants file a Notice of Appeal to the Board of Appeals and Interferences appealing the final rejection of the claims in the above-identified Examiner's Action. Please charge deposit account 09-0468 any fee necessary to enter such Notice of Appeal.

In the event that this amendment does not result in allowance of all such claims, the undersigned attorney respectfully requests a telephone interview at the Examiner's earliest convenience.

MPEP 713.01 states in part as follows:

Where the response to a first complete action includes a request for an interview or a telephone consultation to be initiated by the examiner, ... the examiner, as soon as he or she has considered the effect of the response, should grant such request if it appears that the interview or consultation would result in expediting the case to a final action.

Respectfully submitted,

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